

Appl. No. 10/092,577
Amdt. dated June 7, 2004
Reply to Office Action of February 17, 2004
And Notice of Non-Compliant Amendment dated May 28, 2004

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- Claim 1. (Withdrawn) A reactor for filtering water comprising:
- (a) one or more modules of filtering membranes located within a tank;
 - (b) a source of transmembrane pressure to the membranes for withdrawing a permeate from the insides of the immersed membranes;
 - (c) an aeration system operable to supply bubbles to the tank to inhibit fouling of the membranes;
 - (d) a feed inlet for introducing feed water to the tank;
 - (e) a retentate outlet for removing retentate from the tank;
 - (f) a gas recirculation system to collect one or more gases liberated from feed water in the tank and return the collected gases to the aeration system.
- Claim 2. (Withdrawn) The reactor of claim 1 wherein the gas recirculation system includes a lid closely fitted to the tank so as to collect gases liberated from substantially the entire surface area of the feed water in the tank but the tank remains open to atmospheric pressure and the transmembrane pressure is provided by applying a suction to the modules.
- Claim 3. (Withdrawn) The reactor of claim 1 wherein the lid is substantially sealed to the tank.

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Claim 4. (Withdrawn) The reactor of claim 1 wherein the aeration system further comprises a blower and a gas dryer wherein the gas dryer is operable to dry the collected gases before the collected gases are returned to the blower of the aeration system.

Claim 5. (Currently Amended) A process for filtering a feed water comprising the steps of:

- (a) providing a tank containing modules of filtering membranes;
- (b) introducing a feed water to the tank to keep the modules immersed in feed water in the tank;
- (c) withdrawing a filtered permeate from the modules;
- (d) withdrawing a retentate from the tank;
- (e) introducing air bubbles a first gas into the water in the tank in bubbles which rise past the membranes to inhibit fouling of the membranes, ~~the air bubbles also causing a gas to be liberated from the water in the tank;~~ and
- (f) ~~collecting the gas liberated from the water in the tank in step (e) and returning the collected gas to the tank by way of the air bubbles~~ a second gas consisting of gases contained in the bubbles after they have risen past the membranes.

wherein the first gas consists essentially of a mixture of the second gas and air.

Claim 6. (Currently Amended) The process of claim 5 wherein the ~~collected~~ first gas includes carbon dioxide in a concentration greater than in air.

Claim 7. (Currently Amended) The process of claim 6 wherein the second gas is 80% or more of the mixture ~~carbon dioxide liberated from the water in the tank is returned to the tank.~~

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Claim 8. (Original) The process of claim 7 wherein the feed water in the tank has scaling tendencies.

Claim 9. (Currently Amended) The process of claim ~~6~~7 wherein the first gas is provided at a superficial velocity of at least 0.01 m/s and has a concentration of carbon dioxide sufficient to maintain a pH of 8.0 or less in the water in the tank when the feed water has a Langlier Scaling Index of greater than 0.5 before being introduced into the tank.

Claim 10. (Original) The process of claim 7 further comprising the step of adding coagulants to the feed water in the tank.

Claim 11. (Withdrawn) The reactor of claims 2 or 3 wherein the gas recirculation system includes an inlet and/or an exhaust to the atmosphere to permit the percentage of liberated gases which are collected to be varied.

Claim 12. (Currently Amended) The process of claim 5, wherein some of the ~~gas liberated from the water in the tank in step (e)~~ gases contained in the bubbles after they have risen past the membranes is collected and returned to the tank in step ~~(e)~~ (f) and some of the ~~gas is~~ gases contained in the bubbles after they have risen past the membranes are vented to the atmosphere.

Claim 13. (New) The process of claim 5 further comprising the steps of drawing a flow of air from the atmosphere into a vacuum induced flow of the second gas to create the first gas.